

REMARKS

Claims 3, 8-12 and 14-16 were pending, of which 3 and 8-11 were withdrawn and 12 and 14-16 rejected. This present amendment cancels all previously pending claims and adds instead new claims 17-28.

New claim 17 as compared to rejected claim 12 includes the following major changes, (1), (2) and (i) set forth below; and also includes the features of cancelled claim 13 as to boiling water shrinkage.

(1) Deleting poly-D-lactic acid and poly-L-lactic acid, and limiting the biodegradable polymer to only the L/D copolymer.

(2) Specifying that the constitution of the nonwoven fabric is as follows, supported by the descriptions in pages 23 to 24:

i) partially fusion-bonded;

ii) the filaments in temporary fusion-bonded spots in a web of the filaments are partially de-bonded through a three-dimensional entanglement process, and the filaments in non-fusion areas are three-dimensionally entangled with each other; and

iii) the filaments in temporary fusion-bonded spots in a web of the filaments are completely de-bonded through a three-dimensional entanglement process, and three-dimensionally entangled with each other.

New claims 18-20 depend on claim 17.

New claims 21 and 25 contain features as stated above, (1), (2), (i), (ii), and (iii) and also includes the features of cancelled claim 13, defining boiling water shrinkage.

New claims 22-24 depend on claim 21 and new claims 26-28 depend on claim 25.

Claims 12 and 14-16 were rejected under 35 USC 102(a) or alternatively under 35 USC 103(a) on the basis of Ryan et al (WO 98/50611).

As described in claims 17, 21 and 25, the nonwoven fabric of the present invention is a thermoformable nonwoven fabric formed by spun bonding filaments having specific performances, and integrating the filaments by specific processes such as a partial spot fusion-bonding (claim 17), partial de-bonding followed by three-dimensional entanglement (claim 21), or complete de-bonding followed by three-dimensional entanglement (claim 25).

Ryan cited by the Examiner merely discloses in Example 1 that filaments are obtained by melt spinning at a lower drafting speed. There is no teaching or suggestion at all in the Example 1 that the product is a spun bonded nonwoven fabric in which filaments are partially fusion-bonded, a spun bonded nonwoven fabric in which the filaments in temporary fusion-bonded spots in parts of a web are in partially de-bonded through a three-dimensional entanglement process and the filaments in non-fusion bonded areas are three-dimensionally entangled with each other, or a spun bonded nonwoven fabric in which the filaments in temporary fusion-bonded spots in parts of a web are completely de-bonded through a three-dimensional entanglement process and three-dimensionally entangled with each other.

Claims 12 and 14-16 were rejected under 35 USC 102(b) or alternatively under 35 USC 103(a) as obvious over Kitamura et al JP-A-7-133511.

As to the fiber composing polymer, in the present invention, as described in amended claim 17, the filaments composing the nonwoven fabric are made of a copolymer of D-lactic acid and L-lactic acid.

In contrast Kitamura, only describes a general concept where poly-lactic acid is referred to. A careful reading of Kitamura detailed description of embodiments only discloses filaments of a copolymer of a lactic acid and ϵ -caprolactone, but does not suggest or teach the copolymer of D-lactic acid and L-lactic acid.

The nonwoven fabric of the present invention is formed of filaments by spun bonding. More specifically, according to the present invention, melted polymer is drafted at a specific low drafting speed (page 5 of the specification) and accumulated without undergoing any thermal stretching treatment, to form a nonwoven fabric of the above mentioned constitution. Since the filaments composing the nonwoven fabric are not stretched with heat, orientation is not developed so that the size of crystal is small.

Whereas, the nonwoven fabric of Kitamura is formed of short fibers obtained by taking up unstretched yarn drafted at a low speed of 800m/min, followed by thermal stretching, and then cutting the yarn into 51mm-long fibers. However, with such short fibers, orientation develops under thermal stretching treatment, and the crystal size becomes larger than that of the present invention. Thus, it is impossible to provide a thermoformable nonwoven fabric like that of the present invention. Further, the nonwoven fabric of Kitamura is formed of short fibers, differing from the nonwoven fabric of the present invention that is formed by spun bonding the filaments.

It can be appreciated that the present invention differs from Kitamura in each of at least three aspects: composition of polymer material, filament form, and nonwoven fabric constitution. In addition, the non-woven fabric of the present invention has thermoformability.

The Examiner is respectfully requested to reconsider and withdraw the rejection(s) in view of the amendments and remarks contained herein.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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